Space Weather Forecast

Issued on Saturday 11 January 2025 at 01:10 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low solar activity during the last 24 hours with only Common-class flares, the largest peaking at 10/2246 UTC from the large region in the northwest. There are ten sunspot regions visible on the Earth-facing disc. The only region currently of note is in the northwest, which has been responsible for the majority of any recent flare activity. A newly formed region in the northeast has shown some rapid growth. The remaining regions on the disc remain small and simple at present.

Due to a lack of recent SOHO coronagraph imagery combined with large gaps in STEREO coronagraph imagery the detection of Coronal Mass Ejections (CMEs) is more uncertain than usual. A possible filament eruption near the centre disc on 09 Jan may bring some enhancement at Earth, however this can not be correlated with coronagraph imagery at present.

Solar Wind / Geomagnetic Activity: Solar winds have been slightly elevated for the majority of the period, around 430km/s, peaking at 490km/s at 10/1110 UTC. The Interplanetary Magnetic Field was largely weak, aside for a brief interval of moderate at the start of the period. The north-south component, was weak and variable. Geomagnetic activity was generally Quiet to Unsettled (Kp1-3) was some Active (Kp4) intervals between 10/0300-0600 and 10/2100-11/0000 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate with an ongoing chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: A lack of coronagraph imagery means that CME analysis is difficult and comes with increased uncertainty. A possible filament eruption from near the centre disc on 09 Jan may bring some enhanced geomagnetic activity, most likely over the UTC weekend. Solar winds are currently slightly elevated, perhaps due to the onset of fast winds from a coronal hole, which is expected to gradually wane by Day 2 (12 Jan). Fast winds from a second coronal hole, which is currently in the centre disc is then expected to bring some enhancement from Day 4 (14 Jan).

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Geomagnetic activity is expected to be mostly Quiet to Unsettled with isolated Active intervals on Day 1 (11 Jan) due to any ongoing HSS influences. Any CME influence is likely to be rather dense, with a chance of G1 to G2 Minor/Moderate storms and a slight chance of G3 Strong Storm intervals possible through Days 1-3 (11-13 Jan), however this is very low confidence. By Day 4 (14 Jan) Unsettled geomagnetic activity is expected with Active intervals likely and a chance of G1 to G2 Minor/Moderate due to a connection to the fast winds from CH08/-.

Energetic Particles / Solar Radiation: Solar radiation is expected to remain near background levels, with only a slight chance of rising in response to any notable flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	25	15	30
Strong	G3	No	5	10	5	5
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	50	50	50	50
Very Active	R3-R5 (X Class)	No	10	10	10	10

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	15	15	15	15
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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